Commercial Aircraft of the World . . .

DC-7F Douglas have been converting to special order on a production line at Santa Monica 33 DC-7 series aircraft for all-cargo use, designation becoming DC-7F ("Speedfreighter") after fitting enlarged fore and aft cargo doors, heavier floor and floor beam structure, lining inside fuselage walls with glass-fibre laminate, and removing all windows. Cost of conversion averages about £115,000 per aircraft. The first DC-7F went into service with American Airlines in September 1959.

Conversion orders have been placed by American Airlines, 15 DC-7B; United, six DC-7B; Panagra, one DC-7B; KLM, two DC-7C; Alitalia, two DC-7C; BOAC, two DC-7C; JAL, two DC-7C; and Riddle, three DC-7C (plus seven more on option).

A special version with pallets-and-rollers cargo loading is available.

Typical data for a DC-7B conversion are as follows:—

Weights: Max take-off, 126,000lb; max landing, 106,800lb; max zero fuel, 100,800lb; capacity payload, 34,000lb (38,000lb for the DC-7C conversion).

Payload accommodation: Max internal width, 9ft 10½in; volume, 5,000-plus cu ft; dimensions of largest door, 6ft 6in × 10ft 4in.

DC-8 Latest addition to the world's most respected family of airliners was announced in 1955, first flown May 30, 1958, certificated (JT3 domestic model) on August 31, 1959, and introduced into service simultaneously by United Air Lines and Delta on September 18, 1959. A total of 172 have been ordered by 20 airlines.

Like its rival the Boeing 707, the DC-8 is offered in a variety of versions. There are two domestic (series 10 and 20) and three international models (series 30, 40, 50) with different tankages and engines. All versions of the DC-8 are dimensionally identical, except for wing area. To improve range, speed and payload, Douglas has designed an extended leading edge for the full span of the wing. The new leading edge extends the chord 4 per cent and wing area has gone up to 2,883 sq ft. The extended leading edge is also available as a "retrofit" on delivered aeroplanes, and has been incorporated on intercontinental and some domestic DC-8s from No. 151. The extended leading edge has improved specific range by 8 per cent, Mach number by 0.02, and has reduced cost per ton-mile by more than 1 per cent.

The domestic DC-8s are powered either by Pratt & Whitney JT3C or JT4A engines; the international versions have JT4A or Rolls-Royce Conways. The order book is as follows: **Aeronaves de Mexico,** one-30, one-50 (from October 1960); **Alitalia,** ten -40 (from April 1960); **CPAL,** four -40 (from February 1961); **Delta,** six -10, three -50 (from July 1959); **Eastern,** fifteen -20 (from January 1960); **Iberia,** three -50 (from May 1961); **JAL,** five -30, one -50 (from July 1960); **KLM,** seven -30, six -50 (from March 1960); **National,** three -20, seven -50 (from February 1960); **Northwest,** five -30 (from May 1960); **Pan American,** nineteen -30 (from February 1960); **Panagra,** four -30 (from April 1960); **Panair do Brasil,** two -30 (from March 1961); **Philippine,** two -30; **SAS,** seven -30 (from March 1960); **Swissair,** three -30 (from April 1960); **TCA,** eleven -40 (from February 1960); **TAI,** three -30 (from July 1960); **Trans Caribbean,** one -30 (from November 1961); **United,** twenty-three -10, fourteen -20, three -50 (from May 1959); **UAT,** two -30 (from June 1960).

DC-8-10

Powerplant: Four Pratt & Whitney JT3C-6 turbojets of 13,500lb static thrust each.

Dimensions: Span, 142ft 5in; length, 150ft 6in; height empty, 42ft 4in; wing area, 2,725 sq ft; (2,883.6 sq ft with glove); sweepback at quarter chord, 30°.

Weights: Max take-off, 273,000lb; max landing, 193,000lb; zero fuel, 165,900lb; capacity payload (weight limited), 37,315lb; manufacturer's weight, empty, 119,797lb.

Payload accommodation: Cabin volume (less flight deck), 7,617 cu ft; baggage and freight volume, 1,390 cu ft; cabin accommodational length, 103ft 8in; max internal width, 11ft 7in; max height, 8ft; max usable floor area (less flight deck), 1,078.5 sq ft; dimensions of largest door, 34½in × 72in; max number of seats, 120-177 at 32-35in pitch.

Fuel capacity: 17,550 US gal.

Water-methanol capacity: 720 US gal.

Performance: Opt-cost (i.e., typical) cruising speed at 35,000ft and 220,000lb, 472kt; take-off field length, 9,550ft; landing field length, 6,410ft; range A (max payload), 3,760 n.m.; range B (max fuel), 4,067 n.m.; corres payload, 27,840lb; cruise Mach number, 0.82; VNE, 390kt IAS; VNO (variable with altitude), 340-376kt IAS; VSO, 133kt IAS, VSF = 103kt IAS.

DC-8-20

Powerplant: Four Pratt & Whitney JT4A-3 (or -5, -9, -10) of 15,800lb-16,800lb static thrust each.

Dimensions: As DC-8-10.

Weights: Max take-off, 276,000lb; max landing, 193,000lb; zero fuel, 167,500lb; capacity payload, 35,443lb; manufacturer's weight, empty, 123,876lb.

Payload accommodation: As DC-8-10.

Fuel capacity: As DC-8-10.

Water-methanol capacity: As DC-8-10.

Performance: Opt-cost (i.e., typical) cruising speed at 35,000ft and 220,000lb, 472kt; take-off field length, 7,100ft; landing field length, 6,410ft; range A (max payload), 4,050 n.m.; range B (max fuel), 4,425 n.m.; corres payload, 26,600lb; cruise Mach number, 0.82; VNE, 390kt IAS; VNO, 340-376kt IAS; VSO, 133kt IAS; VSF = 103kt IAS.

The executive Grumman Gulfstream also has possibilities as a DC-3 replacement for airline use

DC-8-30

Powerplant: Four Pratt & Whitney JT4A-3 (or -5, -9, -10, -11, -12) of 15,800lb-17,500lb static thrust each.

Dimensions: As DC-8-10.

Weights: Max take-off, 315,000lb; max landing, 207,000lb; zero fuel, 178,200lb; manufacturer's weight, empty, 126,330 lb.

Payload accommodation: As DC-8-10.

Fuel capacity: 23,392 US gal.

Performance: Opt-cost (i.e., typical) cruising speed at 35,000ft and 230,000lb, 464kt; take-off field length, 9,620ft; landing field length, 6,800ft; range A (max payload), 4,005 n.m.; range B (max fuel), 5,250 n.m.; corres payload, 25,475lb; cruise Mach number, 0.82; VNE, 390kt IAS; 340-374kt IAS; VSO, 136kt IAS; VSF = 107kt IAS.

DC-8-40

Powerplant: Four Rolls-Royce Conway RCo.12s of 18,000lb static thrust each.

Dimensions: As DC-8-10.

Weights: As DC-8-30, except zero fuel, 177,100lb; manufacturer's weight, empty, 124,790lb.

Payload accommodation: As DC-8-10.

Fuel capacity: As DC-8-30.

Performance: Opt-cost (i.e., typical) cruising speed at 35,000ft and 230,000lb, 464kt; take-off field length, 9,050ft; landing field length, 6,800ft; range A (max payload), 5,310 n.m.; range B (max fuel), 5,905 n.m.; corres payload, 23,375lb; cruise Mach number, 0.82; VNE, 390kt IAS; VNO, 340-374kt IAS; VSO, 136kt IAS; VSF = 107kt IAS.

DC-8-50

Powerplant: Four Pratt & Whitney JT3D-3 turbofans of 18,000lb static thrust each.

Dimensions: As DC-8-10.

Weights: As DC-8-40 except zero fuel, 176,500lb; capacity payload, 41,645lb; manufacturer's weight, empty, 124,800lb.

Payload accommodation: As DC-8-10.

Fuel capacity: As DC-8-30.

Performance: Opt-cost (i.e., typical) cruising speed at 35,000ft and 220,000lb, 473kt; corres s.f.c., 0.0420 n.m./lb; take-off field length, 25° flap, max take-off weight, SL, 9,300ft; landing field length, max landing weight, SL, 6,555ft; range A (max payload), 5,855 n.m.; range B (max fuel), 6,550 n.m.; corres payload, 25,915lb; cruise Mach number, 0.82; VNE, 390kt IAS; VNO, 340-374kt IAS; VSO, 136kt IAS; VSF = 107kt IAS.

DC-8F Announced in April 1961, the Jet Trader version of the DC-8 is designed for all-freight or mixed cargo-passenger work. Original schedule called for first flight in August 1962 and deliveries at the end of 1962. It has the same powerplant as the DC-8-50 (JT3D-3 turbofans), and incorporates the wing leading-edge modifications. Interior arrangements are variable, ranging from the all-cargo aircraft, capable of carrying up to 94,668lb of bulk-loaded freight or 91,113lb on pallets, to an all-passenger transport capable of seating 183 economy-class passengers. A typical mixed configuration quoted by Douglas is 54 passengers with baggage, 54,500lb of cargo and fuel reserves to give an operating range of 4,000 miles. The forward cargo door measurs 85in × 140in. Maximum flexibility is provided for by a removable bulkhead, replacing the fixed bulkhead midway between the cargo and passenger sections in the original model. This enables passenger loads of 24, 54, 84 or 114 to be carried with a proportionate reduction in cargo space. With the bulkhead at the midway point, the DC-8F will carry 84 passengers and six 81in × 110in pallets, and a payload amounting to 87,440lb. Payload increases as the passenger volume is decreased because of the greater density of freight.

Powerplant: Four Pratt & Whitney JT3D turbofans of 18,000lb static thrust each.

Dimensions: As DC-8-10 except wing area, 2,883.6 sq ft.

Weights: Max take-off, 315,000lb; max landing, 240,000lb; zero fuel, 224,000lb; capacity payload, 88,022lb; manufacturer's weight, empty, 130,207lb.

Payload accommodation: Cabin volume (less flight deck), 7,920 cu ft; baggage and freight volume, 1,390 cu ft; cabin accommodational length, 108ft 5in; max internal width, 11ft 7in; max height, 8ft; max usable floor area (less flight deck), 1,110 sq ft; dimensions of largest door, 85in × 140in; max number of seats, 219 at 28in pitch.

Fuel capacity: As DC-8-30.

Performance: Opt-cost (i.e., typical) cruising speed at 35,000ft and 220,000lb, 473kt; corres s.f.c., 0.0420 n.m./lb; take-off field length, 25° flap, max take-off weight, SL, 9,300ft; landing field length, max landing weight, SL, 7,450ft; range B (max fuel), 6,550 n.m.; corres payload, 28,830lb; cruise Mach number, 0.82; VNE, 390kt IAS; VNO, 340-374kt IAS; VSO, 147kt IAS; VSF = 115kt IAS.

Douglas Model 2086 This is a project for a short-haul jet airliner. Powerplant would be two JTF10A-2 turbofans of 10,000lb static thrust. Unofficial data are as follows: span, 84ft 8in; length, 95ft 2in; sweepback, 24°; seating, 56-77; gross weight, 69,000lb; cruising speed, 515 m.p.h. at 25,000ft; field length required (90°F, 56 passengers for 300 miles), 5,000ft.